

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
18 September 2003 (18.09.2003)

PCT

(10) International Publication Number
WO 03/077230 A1(51) International Patent Classification⁷: G09G 3/32

(21) International Application Number: PCT/IB03/00524

(22) International Filing Date: 7 February 2003 (07.02.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0205859.2 13 March 2002 (13.03.2002) GB(71) Applicant (for all designated States except US): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): FISH, David, A.
[GB/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven
(NL).

(74) Agent: WILLIAMSON, Paul, L.; Internationaal Ocroobureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

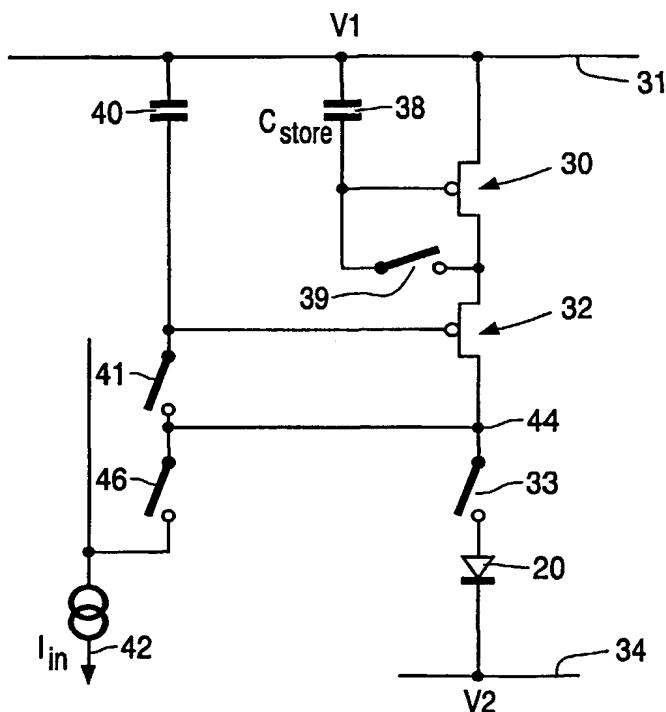
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: ELECTROLUMINESCENT DISPLAY DEVICE



(57) Abstract: An active matrix electroluminescent (EL) display device has a switching circuit for each display pixel which has a drive transistor (30) and a cascode transistor (32) in series with the associated EL display element (20). The switching circuit is operable in two modes, a first mode in which an input current is sampled by the drive transistor (30) and a second mode in which the drive transistor drives a current corresponding to the input current through the EL display element (20). This configuration uses the same transistor for current sampling as for current driving, thereby avoiding the need for matched transistors. The cascode transistor increases the output impedance and ensures that no voltage fluctuations pass to the drive transistor, so that a constant current supply is maintained.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

PCT/IB 03/00524

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G09G3/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G09G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 65012 A (KONINKL PHILIPS ELECTRONICS NV ;PHILIPS SVENSKA AB (SE)) 16 December 1999 (1999-12-16) abstract the whole document ---	1-11
A	EP 1 130 565 A (SONY CORP) 5 September 2001 (2001-09-05) abstract page 12, paragraph 78 -page 13, paragraph 82; figure 12 ---	1-11
A	EP 1 170 718 A (SEIKO EPSON CORP) 9 January 2002 (2002-01-09) abstract the whole document --- -/-	1

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the International filing date
- *L* document which may throw doubts on priority, claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *V* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

13 June 2003

Date of mailing of the international search report

24/06/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.
Fax: (+31-70) 340-3016

Authorized officer

Wolff, L

INTERNATIONAL SEARCH REPORT

PCT/IB 03/00524

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P , A	US 2002/084463 A1 (SCHLIG EUGENE S ET AL) 4 July 2002 (2002-07-04) abstract page 4, paragraph 58; figure 6 -----	1

INTERNATIONAL SEARCH REPORT

PCT/IB 03/00524

Patent document cited in search report	Publication date		Patent family member(s)		Publication date
WO 9965012	A	16-12-1999	EP 1034529 A2 WO 9965012 A2 JP 2002518691 T US 2002126073 A1 US 6359605 B1		13-09-2000 16-12-1999 25-06-2002 12-09-2002 19-03-2002
EP 1130565	A	05-09-2001	EP 1130565 A1 WO 0106484 A1		05-09-2001 25-01-2001
EP 1170718	A	09-01-2002	CN 1388951 T EP 1170718 A1 WO 0205254 A1 US 2002033718 A1		01-01-2003 09-01-2002 17-01-2002 21-03-2002
US 2002084463	A1	04-07-2002	WO 02054373 A2		11-07-2002